

XXXVII.—On *Perna quadrata*, Sow. By JOHN LYCETT, Esq.*

THE present notice of a fossil shell, which has already been figured and described, requires some explanation.

The *Perna quadrata* of the 'Mineral Conchology,' t. 490. f. 2, represents a very inequivalve *Perna*; but as the specimen figured appears to have been somewhat imperfect, and as it was placed by the artist in an unfortunate position and is seen only from a single point of view, it affords a very insufficient aid to a description which is substantially correct as far as it refers to the only specimen which appears to have been at the disposal of the author. With such an illustration it will not afford surprise to find that Phillips in his *Geology of Yorkshire*, t. 9. f. 24, represented a second and very different shell under the name of *Perna quadrata*; and as the latter work contains no descriptions of species, Goldfuss was in turn also misled to figure a third *Perna* distinct from both the others under the same name (*Petrefacta*, t. 108); upon the same plate however is *Perna rugosa*, which is identical with the *quadrata* of Phillips; the latter is an equivalve, squamous, thick shell, well known to collectors of British Inferior Oolite fossils. There is another inducement to acquire a correct knowledge of the original *Perna quadrata*, inasmuch as the species is a very remarkable one, constituting a departure from the typical forms of the *Pernæ*, and approaching to others of the kindred genus *Inoceramus*. The diagnosis of this shell in the 'Mineral Conchology' is as follows:—"Quadrilateral, one side shorter than the other three; valves gibbose, unequal, the shorter side very concave, bounded by two obtuse carinæ."

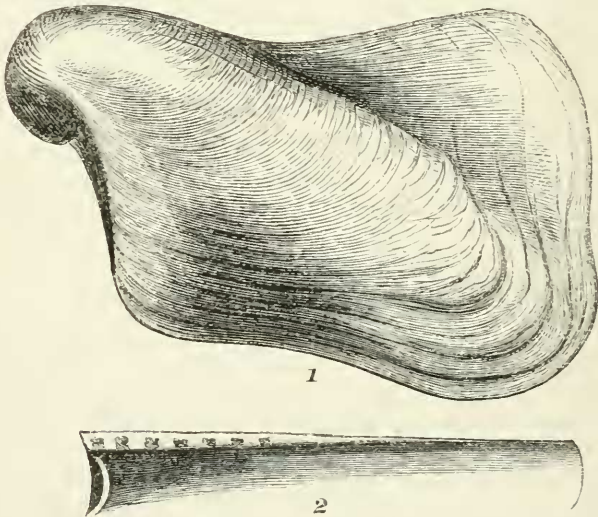
The figure in the 'Mineral Conchology' has the right or flattened valve facing the spectator; the contour of the larger or convex valve therefore is not seen: the shell is not placed upright upon the page, the lower border forming the right-hand side of the figure: even the outline is not perfect, as there seems to be a portion of the lower border wanting, and thus forming an angle at its anterior extremity, which would be rounded were that part entire.

The typical *Pernæ* are equivalve or subequivalve; their fibrous tests are squamous externally, and acquire great thickness with advance of growth; the valves are so much flattened, that their attenuated apical extremities have not more thickness or convexity than the corresponding parts of the *Pinnæ* and *Mytili*; the hinge-plate is always broad, the greater length of the valve being always perpendicular to, or in the opposite direction to the line of the hinge-plate. *Perna quadrata*, on the contrary,

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is very inequivalve, and with advance of growth it becomes almost gryphoidal; the umbo of the larger valve is very prominent, straight and incurved; the anterior side of the valve is steep, with a large excavation, byssal aperture and corrugated border; the posterior side is much compressed, and extended into a kind of imperfect wing; the hinge-plate is narrow, its border is much lengthened, so that the greater length of the valve is in that direction, and the shell is transverse; the narrow hinge-plate renders the ligamental grooves very short, their diameter laterally being equal to their length, as is often seen in the genus *Gervillia*; they diminish rapidly, so that the posterior half of the hinge-line is destitute of hinge-plate and grooves. The byssal aperture is formed by the larger valve only. In both valves the test is very thin, excepting at the prominent umbo and anterior side of the larger valve; the surface, unlike that of the typical *Pernæ*, is smooth; the right valve has little convexity, and its umbo little prominence; its anterior border is thickened as in the other valve.

In the *Pernæ*, as in the *Inocerami*, much variability exists in



Perna quadrata, Sow.

1. Exterior of the convex valve.
 2. Hinge-plate of the flattened valve.
- (Reduced one-fourth.)

specimens of the same species, the result not only of different stages of growth, but also of individual peculiarities. All the specimens of *Perna quadrata* differ more or less from each other

and from the figure in the 'Mineral Conchology,' so that the identity of these specimens with Sowerby's shell has not been ascertained without the examination of a considerable number of examples. The contrast which *Perna quadrata* presents to the typical *Pernæ* is therefore very great; its general aspect is in fact that of an *Inoceramus*, more especially of the subinvolute forms of the latter genus, from which it is distinguished only by the anterior excavation and aperture; but as this feature is one only of subordinate value when viewed singly, there would seem to need the addition of some other distinctive features ere we are enabled to affirm the clear generic separation of *Perna* and *Inoceramus*. The oblong flattened figure of the smaller valve and the thinness of the test might cause it to be mistaken for a *Crenatula* when the hinge-plate is not exposed. *Perna quadrata* may therefore be regarded as the type of a group of inequivalve transverse shells, whose relation to the typical *Pernæ* may be compared with that which certain aberrant species of the kindred genera *Inoceramus* and *Gervillia* bear to their respective typical groups. Of the Jurassic forms more especially may be instanced the large *Gervillia Hartmanni* and *G. tortuosa*, compared with the flattened subequivalve species of the same genus; in these and other instances the inequality of the valves becomes more marked with advance of growth. The very perfect preservation of the hinge-plate, together with the condition of the tests of associated bivalves, forbids the supposition that the thinness of the test has been produced by the removal of thick nacreous layers from the inner surface.

Dimensions.—Length of our largest specimen in the direction of the hinge-line $5\frac{1}{4}$ inches, height $3\frac{3}{4}$ inches, convexity of the larger valve 2 inches.

Geological position and localities.—The specimen figured in the 'Mineral Conchology' is from the Cornbrash of Bulwick; our own specimens are from the freestone portion of the Inferior Oolite near Nailsworth, from a quarry in Woodchester Park, worked for the purposes of the Roman Catholic Monastery; specimens have also been obtained in the freestone quarries of Scar Hill in the parish of Minchinhampton, thus affording an additional instance of that general resemblance between the Testacea of the Cornbrash and the Inferior Oolite, which has been noticed by Professor Buckman in a paper on the Cornbrash of Cirencester, and which forms a part of the Proceedings of the Cotteswold Naturalists' Club. The exact position of *Perna quadrata* in the freestone is the two uppermost beds of that rock, immediately underlying the Oolite marl, or in its absence, the cream-coloured hard argillaceous limestone with *Nerineas* which replaces it in the valley of Nailsworth.